

Unit 1 Day 4 WS
Horizontal & Vertical Shifts WS

Name _____ Per _____

Date: _____

Sketch a graph of each function using the three critical points.

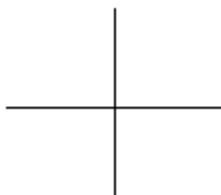
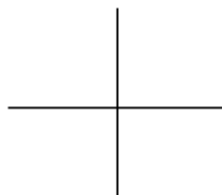
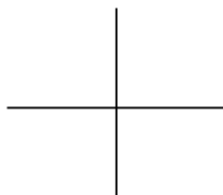
1. $F(x) = x^2$

2. $F(x) = |x|$

3. $F(x) = \sqrt{x}$

4. $F(x) = x^3$

5. $F(x) = x$



Describe in words how the parent function is moving.

6. $F(x) = (x-3)^2 - 2$ _____

7. $F(x) = |x + 1| - 1$ _____

8. $F(x) = \sqrt{x - 2} + 4$ _____

9. $F(x) = x^3 + 4$ _____

10. $F(x) = x - 1$ _____

State the parent function and graph the three critical points. Then with another color move the points according to the transformation and graph it.

11. $F(x) = (x + 2)^3 - 1$

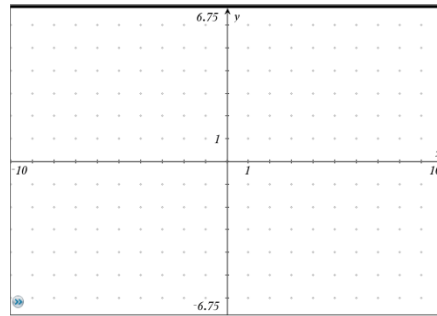
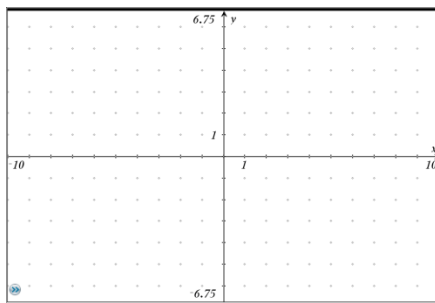
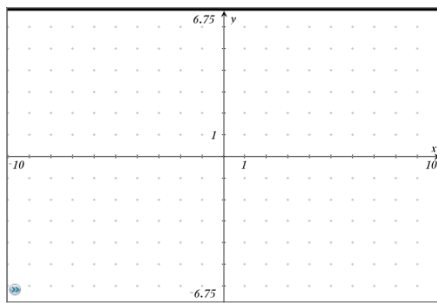
12. $F(x) = |x + 3| + 2$

13. $F(x) = \sqrt{x - 1} - 1$

parent _____

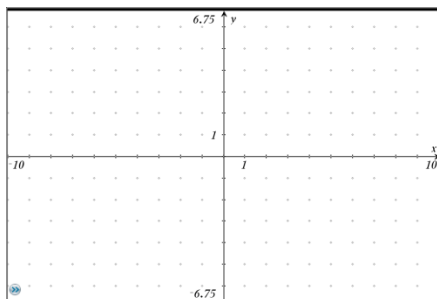
parent _____

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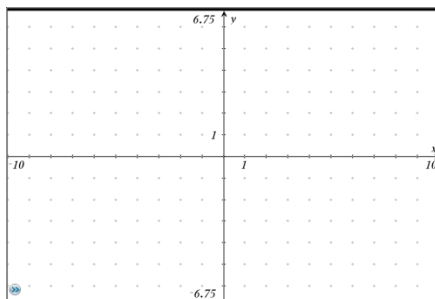
14. $F(x) = x^2 - 3$

parent _____



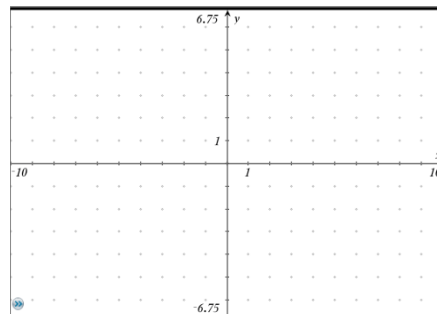
15. $F(x) = x - 5$

parent _____



16. $F(x) = |x + 4| + 6$

parent _____



Another parent function that we will see in a later chapter is $f(x) = a^x$, where a is a number. This is called an exponential function. The three critical points for this graph are $(-1, \frac{1}{a})$, $(0, 1)$ and $(1, a)$. For the parent function, the graph cannot pass the x -axis because there is a horizontal asymptote there. When the graph moves up or down the asymptote has to move the same amount. So, take a look at the following function and graph it according to the transformation rules we learned today.

17. $F(x) = 2^{(x-2)} + 3$

